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A METHOD FOR ESTIMATING THE PROPERTIES OF A SOLID MATERIAL SUBJECTED TO COMPRESSIONAL FORCES

ABSTRACT OF THE DISCLOSURE

A method to measure the complex frequency-dependent dilatational and shear wavenumbers of a material under a static compressional force. The material is first vibrated in a vertical and horizontal directions while obtaining transfer functions in each direction. The two transfer functions are combined with a theoretical model to estimate a dilatational wavenumber and a shear wavenumber. The wavenumbers can be utilized to give the complex dilatational wavespeed, complex shear wavespeed, complex Lamé constants, complex Young's modulus, complex shear modulus, and complex Poisson's ratio.